NWS: EHB-6, Modification Note 46
DoD: TO 31P1-4-108-562
FAA: EEM Modification Handbook 6345.1 CHG 7, Chap 7

RETROFIT OF THE EXHAUST ADAPTER IN THE KOHLER ENGINE GENERATOR

DOPPLER METEOROLOGICAL RADAR WSR-88D

PUBLISHED UNDER AUTHORITY OF THE SECRETARIES OF
COMMERCE, THE AIR FORCE, THE NAVY, AND TRANSPORTATION

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NWS APPROVAL:

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John McNulty
Chief, Engineering Division

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_____Date _____
George W. Terrell
Program Director for Operational Support

DoD APPROVAL:

BY ORDER OF THE SECRETARY OF THE AIR FORCE

MICHAEL E. RYAN, General, USAF
Chief of Staff

//SIGNED//
_____Date _____
Edward L. Berkowitz, Chief
System Support Branch
Operational Support Facility
TOMA

1. SUBJECT

Retrofit of the exhaust adapter in the Kohler engine generator.

2. PURPOSE

The purpose of this routine modification is to remove and replace the exhaust adapter in the exhaust system of the Kohler engine generator with a new modified exhaust adapter. The new modified exhaust adapter will have four piston type rings installed in grooves machined into the adapter to prevent exhaust fumes (not a health hazard) from contaminating the radiator during cold starts. The exhaust adapter/spacer (modified) is located between the turbo charger and the exhaust pipe elbow. The authority for this modification is Operational Support Facility (OSF) Engineering Change Proposal (ECP) F0080R1, Turbo Charger Exhaust Leak Fix.

For additional information concerning this modification note, contact the Operational Support Facility, Hotline, Norman, Oklahoma; phone number: (800) 643-3363. An electronic copy of this modification note can be found at the following Internet address: www.osf.noaa.gov/ssb/sysdoc/techman/tmlinks.htm

3. SITES AFFECTED

See ATTACHMENT 2. Sites listed with a footnote are test sites and will not be receiving a kit.

4. ESTIMATED COMPLETION DATE

The target completion date of this modification is 60 days after receipt of modification document and kit.

5. EQUIPMENT AFFECTED

Radar Data Acquisition (RDA) Emergency Power Generator (Kohler).

6. SPARES AFFECTED

Not applicable.

7. MODIFICATION ACCOMPLISHED BY

Site electronic technicians/facilities technicians will accomplish this modification. Two technicians are required to perform these procedures.

8. MATERIAL REQUIRED

Nomenclature	Part Number	NSN	Qty
Exhaust adapter/spacer (modified)	2500021-301	5340-01-461-8112	1

9. SOURCE OF MATERIALS

Kits are requisitioned by the OSF Logistics Section and shipped at no cost to the site.

10. SPECIAL TOOLS AND TEST EQUIPMENT REQUIRED

Not applicable.

11. TIME AND PERSONNEL REQUIRED

Work Phases	AFSC Skills	Work-Hours
Unpacking	2E051	0.1
Disassembly	2E051	0.4
Installation	2E051	0.4
Assembly	2E051	0.0
Operational Check	2E051	0.1
Total Work-Hours		1.0

12. DOCUMENTS AFFECTED

Not applicable.

13. VERIFICATION STATEMENT

This modification was successfully installed at WSO Jacksonville, FL.

14. DISPOSITION OF REMOVED AND REPLACED PARTS/MATERIALS

Dispose of the removed exhaust adapter in accordance with local procedures.

15. PROCEDURES

See ATTACHMENT 1.

16. FAA DISTRIBUTION

This directive is distributed to selected offices and services within Washington headquarters, the William J. Hughes Technical Center, the Mike Monroney Aeronautical Center, regional Airway Facilities divisions, and Airway Facilities field offices having the following facilities/equipment: NXRAD.

17. CHANGES TO TABLE OF CONTENTS (FAA)

This chapter will be included in the next revision to the table of contents for FAA Order 6345.1, Electronic Equipment Modification Handbook - Next Generation Weather Radar (NEXRAD).

18. RECOMMENDATIONS FOR CHANGES (FAA)

Forward any recommendations for changes to this directive through normal channels to the National Airway Systems Engineering Division, AOS-200, Operational Support.

19. REPORTING INSTRUCTIONS

NWS

Report completed modification on WS Form A-26, Engineering Management Reporting System Maintenance Record, according to instructions in EHB-4, Part 2, using reporting code RAEG. Also, record the modification number in block 17(a) as 46 (see attachment 4 for a completed sample of WS Form A-26).

Complete ATTACHMENT 3 and fax, mail, or e-mail information to:

(1) Mail Address: System Support Branch, Logistics Section
Operational Support Facility
3200 Marshall Ave Suite 101
Norman, Oklahoma 73072-8028

(2) Fax Number: (405) 366-6553
ATTN: Logistics Section

(3) E-mail Address: Logistics@osf.noaa.gov

ATTACHMENT 1

REMOVAL AND REPLACEMENT PROCEDURES FOR THE TURBO CHARGER EXHAUST ADAPTER SPACER (MODIFIED)

TOOLS REQUIRED:

Safety goggles/glasses
Ear plugs
Standard combination wrench set
10-inch adjustable wrench
Standard 3/8-inch drive, socket set
3/8-inch drive ratchet
All purpose grease
Shop rags
Shop vacuum
Tape or wax pencil
Wire brush or fine grit emery cloth
Ladder, 6-foot step

WARNING

The engine exhaust system can get extremely hot. Failure to perform the shutdown steps below could result in severe injury. In addition, if the engine has been running, allow the exhaust system to cool before performing the following steps.

1. Perform the following Exhaust Adapter/Spacer (EAS) removal procedures:

   a. At the Generator Control Panel, push the Emergency Stop button in.

   b. Locate the muffler adjusting bolts attached to the ceiling. Using tape or a wax pencil, mark the lower threads of the adjusting bolts to where the lower adjusting nuts are located. See Figure 1.

ATTACHMENT 1 (Continued)

REMOVAL AND REPLACEMENT PROCEDURES FOR THE TURBO CHARGER EXHAUST ADAPTER SPACER (MODIFIED)

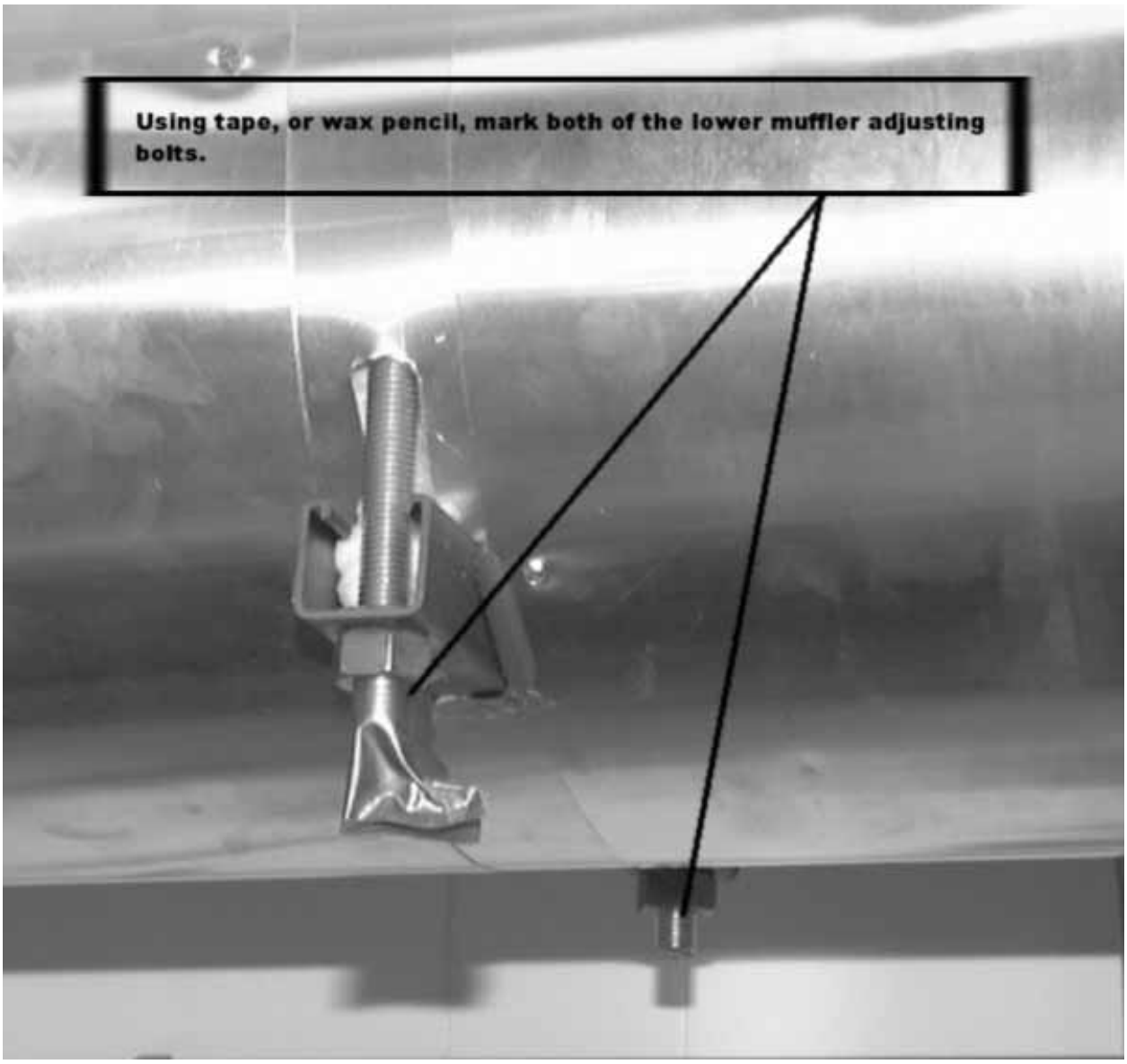

Figure 1. Marked Muffler Assembly Adjusting Bolts

ATTACHMENT 1 (Continued)

REMOVAL AND REPLACEMENT PROCEDURES FOR THE TURBO CHARGER EXHAUST ADAPTER SPACER (MODIFIED)

c. Using the appropriate wrench or socket, loosen the exhaust clamp and move the clamp up the exhaust pipe to keep out of the way.

d. Using a 10-inch adjustable wrench, loosen the two top muffler adjusting nuts until the nuts are approximately 2 inches above the upper support bracket.

e. Using a 10-inch adjustable wrench, evenly tighten the lower muffler support nuts to lift the exhaust pipe off of the exhaust elbow flange approximately 1/2-inch.

f. If applicable, remove any previous wraps used to seal the exhaust from leaking.

g. Using the appropriate wrench or socket, loosen all four bolts that hold the exhaust elbow to the exhaust manifold.

h. Remove three of the four bolts loosened in the previous step. Leave the one bolt highlighted in Figure 2 in place with all threads removed from the exhaust manifold.

ATTACHMENT 1 (Continued)

REMOVAL AND REPLACEMENT PROCEDURES FOR THE TURBO CHARGER EXHAUST ADAPTER SPACER (MODIFIED)

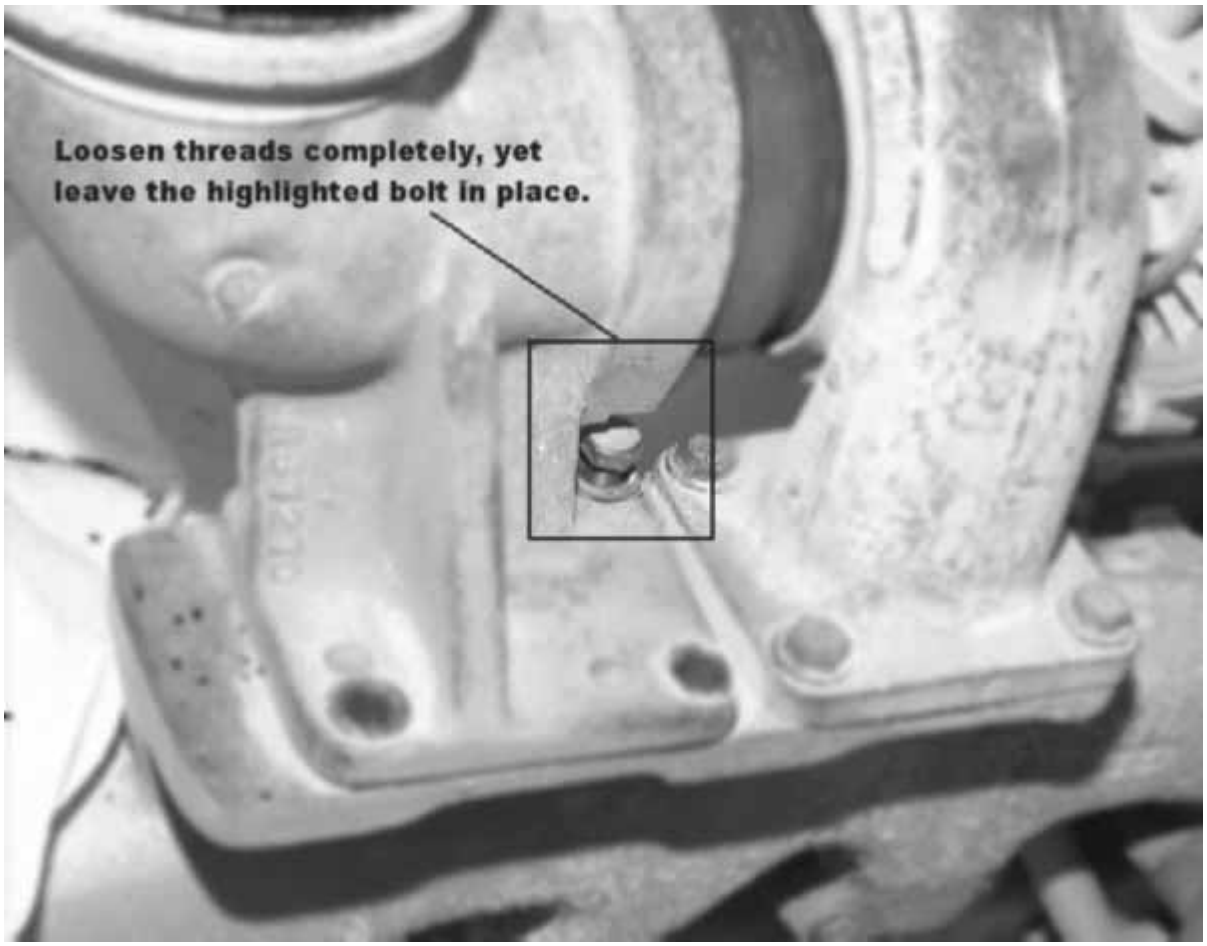

Figure 2. Exhaust Elbow Bolts

ATTACHMENT 1 (Continued)

REMOVAL AND REPLACEMENT PROCEDURES FOR THE TURBO CHARGER EXHAUST ADAPTER SPACER (MODIFIED)

i. Carefully remove the EAS and exhaust elbow from the turbo charger.

j. Remove the exhaust elbow from the exhaust pipe.

k. Remove the EAS from the exhaust elbow and set aside.

2. Perform the following replacement procedures:

a. Using a soft wire brush or fine grit emery cloth, remove any carbon buildup from the inside of the turbo charger where the EAS rings will seat. See Figure 3.

ATTACHMENT 1 (Continued)

REMOVAL AND REPLACEMENT PROCEDURES FOR THE TURBO CHARGER EXHAUST ADAPTER SPACER (MODIFIED)

Figure 3. Turbo Charger Carbon Buildup

ATTACHMENT 1 (Continued)

REMOVAL AND REPLACEMENT PROCEDURES FOR THE TURBO CHARGER EXHAUST ADAPTER SPACER (MODIFIED)

b. Using a soft wire brush or fine grit emery cloth, thoroughly clean the inside lip of the exhaust elbow of any carbon buildup where the new EAS rings will seat.

c. Using an all purpose grease, lubricate the inside lip of the exhaust elbow where the new EAS rings will seat.

d. Position the rings on the new EAS so that the top two and bottom two expansion gaps are approximately 180 degrees apart. This will prevent exhaust fumes from bypassing the rings and contaminating the radiator. (See Figure 4)

e. Using an all purpose grease, lubricate the rings of the EAS.

CAUTION

DO NOT use a hammer, mallet, or blunt object to tap the EAS into the turbo charger or the exhaust elbow. Tapping the EAS can cause damage to the EAS or to the turbo charger.

f. Using Figure 5, locate the larger machined inside diameter side of the EAS.

g. Using your finger, compress the rings and slide the EAS into the exhaust elbow with the **larger machined inside diameter end out**. Do NOT force the rings into the exhaust elbow. Forcing the rings into the exhaust elbow could cause the rings to bind and possibly break. (See Figure 5)

h. Turn the EAS until the OSF part number is visible when installed. (See Figure 4)

i. Verify that the exposed ring gaps on the EAS are approximately 180 degrees apart from each other.

j. Using an all purpose grease, lubricate the inside edge of the turbo charger where the EAS rings will seat.

k. Insert the exhaust elbow into the exhaust pipe and align the new EAS to the turbo charger. Verify that the larger inside diameter of the EAS is facing into the turbocharger.

l. Using your fingers, compress the rings and slide the EAS into the turbo charger. Do NOT force the rings into the turbo charger. Forcing the rings could cause the rings to bind or possibly break.

m. Align and start the bolts removed from the exhaust elbow and hand tighten.

n. Using the appropriate wrench or socket, tighten all four bolts started in the previous step.

ATTACHMENT 1 (Continued)

REMOVAL AND REPLACEMENT PROCEDURES FOR THE TURBO CHARGER EXHAUST ADAPTER SPACER (MODIFIED)

Figure 4. Ring Gap Position

ATTACHMENT 1 (Continued)

REMOVAL AND REPLACEMENT PROCEDURES FOR THE TURBO CHARGER EXHAUST ADAPTER SPACER (MODIFIED)

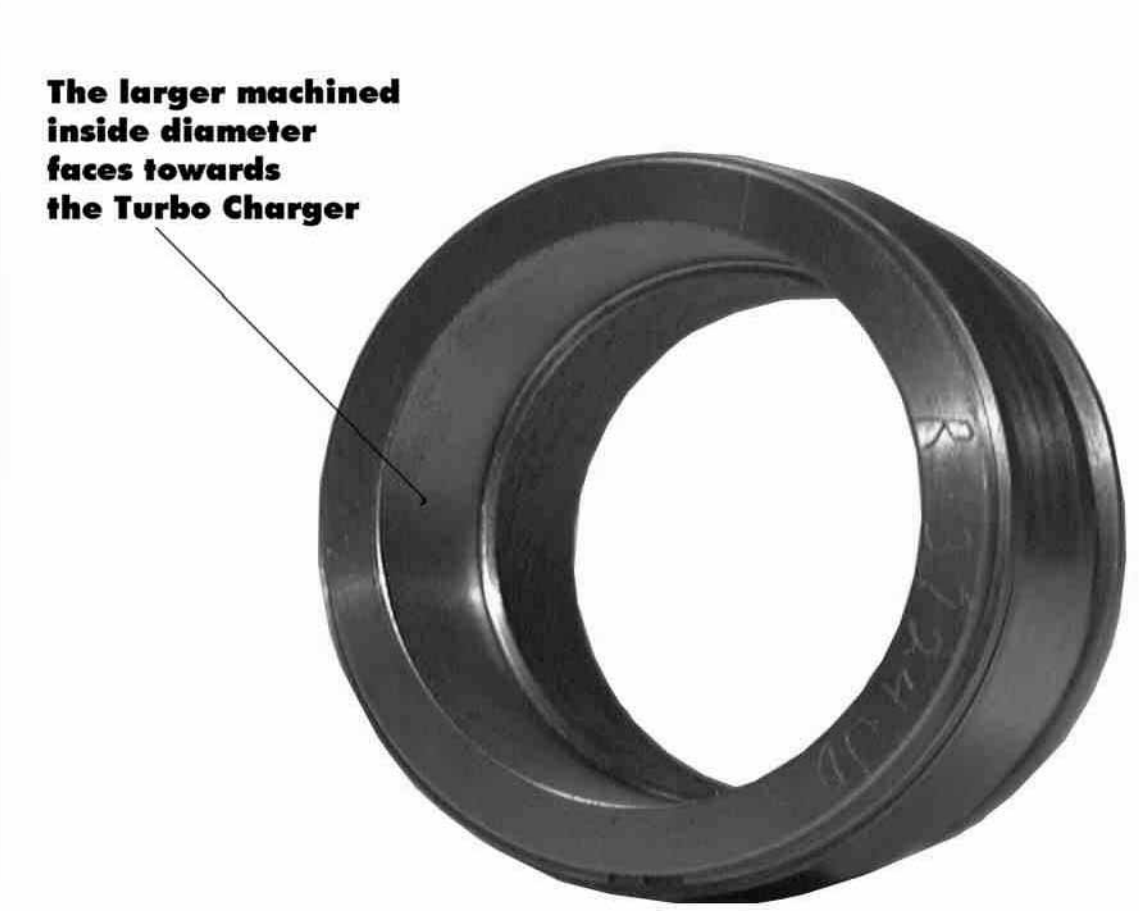

Figure 5. Larger Inside Diameter Example

ATTACHMENT 1 (Continued)

REMOVAL AND REPLACEMENT PROCEDURES FOR THE TURBO CHARGER EXHAUST ADAPTER SPACER (MODIFIED)

o. Using a 10-inch adjustable wrench, gradually and evenly lower the muffler assembly by turning the lower adjusting nuts counterclockwise until the nuts reach the marked threads.

p. Using a 10-inch adjustable wrench, turn the upper muffler support adjusting nuts counterclockwise until the nuts are seated on the upper adjusting rail.

q. Reposition the exhaust clamp between the exhaust pipe and exhaust elbow.

r. Using the appropriate wrench or socket, tighten the exhaust clamp.

s. Using a shop vacuum, clean all carbon and dirt from around the turbo charger and exhaust assembly to include the engine.

t. Inspect the Kohler Engine Generator to ensure that all bolts are tight and that no tools, rags, or hardware are left on the engine.

3. Perform the following operational testing procedures:

CAUTION

Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.

a. At the Generator Control Panel, turn the Emergency Stop button a quarter turn clockwise to disengage.

b. Set the Kohler Engine Generator RUN-OFF/RESET-AUTO switch to the **RUN** position.

c. Watch as the engine starts to verify that no exhaust leaks from the newly installed EAS.

d. Perform steps 3.b through 3.c. several times to ensure that a proper seal has been made.

e. Set the Kohler Engine Generator RUN-OFF/RESET-AUTO switch to the **AUTO** position. (See Figure 6).

ATTACHMENT 1 (Continued)

REMOVAL AND REPLACEMENT PROCEDURES FOR THE TURBO CHARGER EXHAUST ADAPTER SPACER (MODIFIED)

Figure 6. Generator Control Panel

ATTACHMENT 2

EFFECTIVITY

NWS

Site Name	SID	Org Code
Eastern Region		
WSFO Albany, NY	ENX	WN9518
WSO Binghamton, NY	BGM	WN9515
WSFO Boston, MA	BOX	WN9509
WSFO Brookhaven, NY	OKX	WN9912
WSFO Buffalo, NY	BUF	WN9528
WSO Burlington, VT	CXX	WN9617
WSFO Caribou, ME	CBW	WN9712
WSO Charleston, SC	CLX	WN9208
WSFO Charleston, WV	RLX	WN9414
WSO Cincinnati, OH	ILN	WN9710
WSFO Cleveland, OH	CLE	WN9524
WSFO Columbia, SC	CAE	WN9310
WSO Greer, SC	GSP	WN9312
WSO Morehead City, NC[a]	MHX	WN9307
WSFO Norfolk, VA	AKQ	WN9952
WSFO Philadelphia, PA	DIX	WN9950
WSFO Pittsburgh, PA	PBZ	WN9917
WSFO Portland, ME	GYX	WN9938
WSFO Raleigh/Durham, NC	RAX	WN9306
WSO Roanoke, VA[a]	FCX	WN9954
WSO State College, PA	CCX	WN9925
WSO Wilmington, NC	LTX	WN9301

ATTACHMENT 2 (Continued)

EFFECTIVITY

Site Name	SID	Org Code
Southern Region		
WSFO Austin/San Antonio, TX[a]	EWX	WP9253
WSFO Albuquerque, NM	ABX	WP9365
WSO Amarillo, TX	AMA	WP9363
WSFO Atlanta, GA	FFC	WP9219
WSFO Birmingham, AL	BMX	WP9957
WSO Brownsville, TX	BRO	WP9250
WSO Corpus Christi, TX	CRP	WP9251
WSFO Dallas/Ft Worth, TX	FWS	WP9259
WSO El Paso, TX	EPZ	WP9270
WSFO Jackson, MS	JAN	WP9235
WSO Jacksonville, FL	JAX	WP9206
WSFO Key West, FL	BYX	WP9201
WSO Knoxville, TN	MRX	WP9325
WSO Lake Charles, LA	LCH	WP9240
WSFO Little Rock, AR	LZK	WP9340
WSFO Lubbock, TX	LBB	WP9933
WSFO Memphis, TN	NQA	WP9334
WSFO Miami, FL	AMX	WP9918
WSO Midland/Odessa, TX	MAF	WP9265
WSO Mobile, AL	MOB	WP9223
WSO Nashville, TN	OHX	WP9327
Northeast Alabama, AL	HTX	WP9913
WSO San Angelo, TX	SJT	WP9263
WSO Shreveport, LA	SHV	WP9248

ATTACHMENT 2 (Continued)

EFFECTIVITY

Site Name	SID	Org Code
WSFO Slidell, LA	LIX	WP9919
WSO Tallahassee, FL	TLH	WP9214
WSO Tampa, FL	TBW	WP9961
WSO Tulsa, OK[a]	INX	WP9356
Western Arkansas, AR	SRX	WP9356
Central Region		
WSO Aberdeen, SD	ABR	WR9659
WSFO Bismarck, ND	BIS	WR9764
WSFO Cheyenne, WY	CYS	WR9564
WSFO Chicago, IL	LOT	WR9969
WSFO Denver, CO	FTG	WR9469
WSFO Des Moines, IA	DMX	WR9546
WSFO Detroit, MI	DTX	WR9954
WSO Duluth, MN	DLH	WR9745
WSFO Fargo/Grand Forks, ND	MVX	WR9750
WSO Goodland, KS	GLD	WR9465
WSO Grand Island, NE	UEX	WR9552
WSFO Grand Junction, CO	GJX	WR9476
WSO Grand Rapids, MI	GRR	WR9635
WSO Green Bay, WI	GRB	WR9645
WSFO Indianapolis, IN	IND	WR9438
WSO Jackson, KY	JKL	WR9956
WSO La Crosse, WI	ARX	WR9643
WSFO Lincoln, IL	ILX	WR9436
WSFO Louisville, KY	LVX	WR9423

ATTACHMENT 2 (Continued)

EFFECTIVITY

Site Name	SID	Org Code
WSO Marquette, MI	MQT	WR9743
WSFO Milwaukee, WI	MKX	WR9965
WSFO Minneapolis, MN	MPX	WR9658
WSFO NCL Michigan, MI	APX	WR9610
WSFO North Platte, NE	LNX	WR9562
Northern Indiana, IN	IWX	WR9534
WSFO Omaha, NE[a]	OAX	WR9553
WSO Paducah, KY	PAH	WR9957
WSO Pleasant Hill, MO	EAX	WR9446
WSO Pueblo, CO	PUX	WR9464
WSO Quad Cities, IA	DVN	WR9544
WSO Rapid City, IA	UDX	WR9662
WSFO Riverton/Lander, WY	RIW	WR9576
WSFO Sioux Falls, SD	FSD	WR9651
WSO Springfield, MO[a]	SGF	WR9440
WSFO Topeka, KS	TWX	WR9456
WSO Wichita, KS[a]	ICT	WR9450
Western Region		
WSO Billings, MT	BLX	WT9677
WSFO Boise, ID	CBX	WT9681
Cedar City, UT	ICX	WT9932
WSO Elko, NV	LRX	WT9903
WSO Eureka, CA	BHX	WT9594
WSO Flagstaff, AZ[a]	FSX	WT9375
WSO Glasgow, MT	GGW	WT9768

ATTACHMENT 2 (Continued)

EFFECTIVITY

Site Name	SID	Org Code
WSFO Great Falls, MT	TFX	WT9950
WSO Las Vegas, NV	ESX	WT9386
WSFO Los Angeles, CA	VTX	WT9295
WSO Medford, OR	MAX	WT9597
WSO Missoula, MT	MSX	WT9773
WSO Pendleton, OR	PDT	WT9688
WSFO Phoenix, AZ	IWA	WT9278
WSO Pocatello, ID	SFX	WT9578
WSFO Portland, OR	RTX	WT9698
WSFO Reno, NV	RGX	WT9488
WSO Sacramento, CA	DAX	WT9914
WSFO Salt Lake City, UT	MTX	WT9932
WSO San Diego, CA	NKX	WT9918
WSFO San Francisco, CA	MUX	WT9933
WSO San Joaquin Valley, CA	HNX	WT9389
Santa Ana Mountains, CA	SOX	WT9918
WSFO Seattle, WA	ATX	WT9922
WSO Spokane, WA	OTX	WT9785
WSO Tucson, AZ	EMX	WT9274
WSO Yuma, AZ	YUX	WT9278
NWS Headquarters/Misc		
OSF Redundant[a]	OSF02	WG4100
FAA		
Anchorage, AK	AHG	6901AJ

ATTACHMENT 2 (Continued)

EFFECTIVITY

Site Name	SID	Org Code
Bethel, AK	ABC	690112
Fairbanks, AK	APD	690178
Kamuela/Kohala, HI	HKM	699235
King Salmon, AK	AKC	690137
Middleton Island, AK	AIH	690140
Molokai, HI	HMO	699213
Nome, AK	AEC	690147
San Juan, PR	JUA	69F304
Sitka, AK	ACG	690141
South Kauai, HI	HKI	699211
South Shore, HI	HWA	699201

DoD

Andersen AFB, GU	GUA	FE5240
Beale AFB, CA	BBX	FE4686
Camp Humpreys, ROK	KSG	FI5294
Cannon AFB, NM	FDX	FE4855
Columbus AFB, MS	GWX	FE3022
Dover AFB, DE	DOX	FE4497
Dyess AFB, TX	DYX	FE4661
Edwards AFB, CA	EYX	FE2805
Ft Campbell, KY	HPX	FY4812
Ft Drum, NY	TYX	FY4846
Ft Hood, TX	GRK	FY4824
Ft Polk, LA	POE	FY4825
Ft Rucker, AL	EOX	FY4805

ATTACHMENT 2 (Continued)

EFFECTIVITY

Site Name	SID	Org Code
Holloman AFB, NM	HDX	FE4801
Kadena AB, JA	ODN	FH5270
Kunsan AB, ROK	KJK	FH5294
Keesler AFB, MS (OPS)	BIX	FE3010
Keesler AFB, MS (MNTC "B" Trng)	BIX	FE3010
Lajes Field, Azores	PLA	FE4486
Laughlin AFB, TX	DFX	FE3099
Maxwell AFB, AL	MXX	FE3300
Minot AFB, ND	MBX	FE4528
Moody AFB, GA	VAX	FE4830
Robins AFB, GA	JGX	FE2067
Vance AFB, OK	VNX	FE3029
Vandenberg AFB, CA	VBX	FE4610

a. Test Sites. Will not be receiving a kit.

NWS: EHB-6, Modification Note 46
DoD: TO 31P1-4-108-562
FAA: EEM Modification Handbook 6345.1 CHG 7, Chap 7

ATTACHMENT 3

REMOVAL AND REPLACEMENT PROCEDURES FOR THE TURBO CHARGER EXHAUST ADAPTER SPACER (MODIFIED)

Site Name: _____

Site Identifier: _____

Total Time to complete this Modification Document: _____

Technician's Name(s): _____

Technician's Phone Number: _____

Date Completed: _____

Problem(s) Encountered:

_____

_____

_____

_____

Upon completion of this form, mail, fax, or e-mail this information to the OSF:

1. Mailing Address: System Support Branch, Logistics Section
   WSR-88D Operational Support Facility
   3200 Marshall Ave, Suite 101
   Norman, OK 73072-8028

2. FAX Number: (405) 366-6553,
   ATTN: Logistics Section

3. E-mail Address: Logistics@osf.noaa.gov